*Radio Technical Commission for Maritime Services*

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Before the
**FEDERAL COMMUNICATIONS COMMISSION**
Washington, D.C. 20554

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| In the Matter of | ) | |
| | ) | |
| Amendment of the Commission's Rules Concerning Maritime Communications | ) | PR Docket No. 92-257 |

**COMMENTS OF THE**
**RADIO TECHNICAL COMMISSION FOR MARITIME SERVICES**

The Radio Technical Commission for Maritime Services (RTCM) respectfully submits the following comments in response to the Notice of Inquiry portion of the Commission's combined Notice of Proposed Rule Making and Notice of Inquiry in the above entitled matter.

The RTCM is a non-profit organization whose objectives include studying and preparing reports on maritime telecommunications practices, needs and technologies with a view toward improving the efficiency and capabilities of maritime telecommunications services, suggesting ways to keep rules and regulations to the minimum essential for effective maritime telecommunications and making recommendations on important issues involving maritime telecommunications.

The RTCM is of the view that the issues raised in the Notice of Inquiry relate directly to the safety of ships large and small and, additionally, to the efficiency and effectiveness of communications for the entire maritime community. Their resolution will have a substantial impact upon the effectiveness of future maritime telecommunications systems in providing both safety and general communication services for the mariner. The RTCM commends the Commission for raising these issues and for providing the opportunity for the maritime community to participate in developing maritime mobile service rules for application of new and more effective technology and services.

The RTCM is grateful for the extension of comment period granted by the Commission in response to request of the RTCM and others, since it provided opportunity to elicit comment and discussion from a representative group from the maritime community. The extended period enabled the RTCM to solicit views which were compiled into a compendium of comments, opinions, views and recommendations that had been expressed. The compendium document was then used as the baseline for extended discussion at the 1993 RTCM Annual Assembly Meeting.

As a result of the Assembly meeting discussion, the compendium document was revised to more clearly reflect the diversified views and suggestions of the maritime community as expressed during the

meeting. There was not sufficient time within the comment period to further develop the views expressed, to explore problem areas and impact on others of some potential solutions, to consider the national and/or international ramifications of some suggestions, or to develop considered views for specific rulemaking proposals. The revised document is attached hereto as Annex A to these comments in order to provide the Commission with as much information on maritime community views as it was possible to obtain during the comment period.

The RTCM recognizes that the views in Annex A in many instances reflect broad suggestions which need further refinement prior to initiating specific regulatory action. Overall, however, the views expressed reflect a need to consider rule changes that will provide an opportunity for utilization of advanced technology in meeting maritime needs for both safety and general communications. It should be noted that in terms of numbers of vessels affected, the population includes a radio equipped recreational vessel community estimated at 1.25 million boats and a U.S. commercial fleet estimated at over 50,000 vessels ranging from small tugs and fishing vessels to oceangoing ships.

Accordingly, the RTCM recommends:

** That the Commission take note of (1) the general support given in the views of Annex A to the United States Coast Guard

petition proposing mandatory minimum Digital Selective Calling (DSC) capability for maritime radios and (2) Annex B (developed during the meeting from a previous RTCM working document) detailing further reasons for the proposed DSC requirement.

** That the Commission proceed as soon as practicable with further rulemaking based upon the Coast Guard petition.

** That the Commission proceed separately with further rulemaking dealing with issues raised in the NOI and aimed toward providing opportunity for implementation of advanced technology for maritime telecommunications, taking into account views contained in Annex A.

** That in publishing further rulemaking proposals, and in establishing comment periods therefor, the Commission take note of the fact that many of those most affected by the issues delineated in the NOI and in the views expressed in Annex A are those least able to cope effectively with rapid regulatory processes. Operators of many vessels (either recreational or commercial) and of many coast stations do not have regulatory staff personnel or other available to him regulatory experts

consuming process at best. Absent provision of adequate comment time, information presented to the Commission in response to NOI's and NPRM's will not take into account the considered views of all of the affected interests in the maritime community and, further, will not provide the definitive recommendations that would be most helpful to the Commission in charting a course for the future.

Respectfully Submitted,
RADIO TECHNICAL COMMISSION
FOR MARITIME SERVICES

By W. T. Adams
W.T. Adams
President

Dated this 26th Day of May 1993

**ANNEX A TO RTCM COMMENTS of MAY 25, 1993**
**ON FCC NOI PR DOCKET NO. 92-257**

## FOREWORD

**This document has been developed from discussion during the 1993 RTCM Annual Assembly Meeting and does not necessarily represent views of RTCM as an organization.**

The views provided herein follow in order the information presented in the NPRM/NOI and are identified by NPRM/NOI paragraph numbers.

* A. Inquiry: Telecommunications Requirements:

- o Paragraph 12:
  - Comment:
    - It is easier to see the present day needs that aren't being met, than to predict the future needs. The marine community needs the same tools that are now considered routine on land. This includes the ability to send and receive telephone calls, facsimile, electronic mail, and various types of data transfer. The future will no doubt require the ability to employ video technology.
    - Current and future requirements will continue to tax channel capacities and, unless changes are made, communications capabilities will be stymied. A combination of advanced technologies, additional spectrum, and automated operational procedures is essential to meeting marine users needs into the next century.
    - Other services, such as cellular and land mobile, have and will provide relief in waters adjacent to highly populated areas. In other areas not so highly populated, the communications and safety needs between vessels and between vessels and land stations can only be met through services designed specifically for marine use.
  - Comment:
    - There now exists in significant numbers two clearly identifiable market segments, namely commercial and

public coast stations and cellular services will result in the demise of public coast stations if the existing playing field is not leveled so that rules for both are equivalent.

- Comment:
  - In regard to use of cellular radio as well as any other type of land-mobile radio equipment used on vessels, it is suggested that such systems/services should be considered in the same manner as CB many years ago. They are there, they exist, they are used on vessels, and they serve a purpose-- but they are not technically or operationally adequate to meet the needs for maritime distress and safety communications. It would NOT, for example, enhance overall maritime safety by legitimize cellular radio as a maritime service by listing it on a ship station license as an alternative to VHF radio.

- Comment:
  - Problems which must be resolved before cellular telephones should be recognized as meeting distress and safety telecommunications requirements include, but are not necessarily limited to:
    + Definition and publishing of maritime service areas (i.e. coverage areas over water).
    + Means for homing or precise and frequent location updates.
    + Means for signifying the call is for distress.

made to opening the doors to new technology by transitioning some of the current 25 kHz narrow band FM VHF channels to 5 kHz spaced channels to be used for data an/or voice.
- There is a prevailing view among many in the community that the current number of channels is already inadequate in areas of high congestion.

• Comment:
- It is possible that new technologies such as Automatic Link Establishment (ALE) and Amplitude Compandored Single-Side Band (ACSB) could be used in the HF maritime service without adversely affecting the embedded base of equipment.

• Comment:
- Digital selective calling (DSC) and/or Automatic Link Establishment (ALE) is expected to be an essential ingredient to the new technology. All calling should be totally automated, which will increase spectrum efficiency dramatically. This would include (1) determining if the called party was within range, (2) selecting a channel to use, (3) and setting the power levels at each end. Power levels, at a minimum, should automatically switch between 1 and 25 watts for VHF-FM. It would be desirable if more levels could be automatically selected.

* A. Inquiry; Trunking:

o Paragraph 14:

• Comment:
- Trunking as currently used by the land mobile community does not seem appropriate for ship operations because all operations are not confined to a well defined area. The marine community can avail themselves of this type of operation through land mobile licensees and have already done so. The limited number of existing marine channels does not lend itself to this type of operation. The idea may have merit if new technology is adopted and a significant number of new channels are created.
- Rather than conventional trunking, new technology should require equipment to be capable of automatically finding an unused channel, determining all channels are busy, or be capable of picking one with signals at some specified low field strength to share. Equipment used must also

[redacted]

power needed to communicate with the called party. The equipment should be capable of setting its power automatically. A manual override should be available for use during unusual circumstances. A great deal of ship communications are conducted between ships and/or land facilities within sight of each other. Controlling the power levels would reduce interference and allow better reuse of the channels. There are approximately 15 channels used for the majority of intership and ship to coast communications. With new technology these channels could be increased to 75. With automatic calling, automatic channel selection, and automatic power setting, service to the maritime community would be significantly enhanced.

* A. Inquiry; Digital Selective Calling:

- o Paragraphs 15 through 18:

  - Comment:
    - Support for the Coast Guard petition on minimum DSC for maritime radios. At this time, it is not necessary to require by regulation any other DSC capabilities. If the rules are flexible enough, additional signaling functions which may add to the cost of inexpensive VHF radios, can be market-driven. Except for Narrow Band Direct Printing (NBDP), DSC should be the only selective calling system for safety telecommunications.

  - Comment:
    - The GMDSS recognizes selective FEC and ARQ calling techniques in narrow-band direct printing, for example. However, to ensure interoperability, particularly when communications affect safety of life, it is important that selective calling systems either be in accordance with CCIR recommendations, or be interoperable with DSC.

  - Comment:
    - DSC should be the essential part of new technology for maritime radio users. It would be reasonable to have DSC capabilities incorporated into new equipment as early as 1997. It would also be desirable to encourage the development of add-on devices to allow existing equipment to be made DSC capable. The sooner this technology is introduced, the sooner it will become economical to all boat owners. After 1999, the boaters who are not required to use the new technology should continue

to monitor the appropriate channels and provide some measure of safety in areas of heavy marine activity. The Coast Guard should continue to be capable of responding to manual calls on Channel 16. The Commission should designate DSC as the only method of automatic calling no later than 1999, which would coincide with full GMDSS implementation. There is, however, concern that Channel 70 might eventually become overloaded with automatic calling. After the introduction of new technology, a second channel should be added for optional and/or eventual mandatory use for non-safety DSC calling. Early DSC use in establishing automated telephone calling on public correspondence channels is highly desirable. This

for radio equipment carried to meet GMDSS requirements creates a market situation in which many manufacturers will be providing DSC capable radios in any event. This, in itself, will help substantially in minimizing price increases due to DSC alone.

- Comment:
  - Questions were raised as to whether or not DSC could provide the necessary automatic identification necessary to interconnect to the PSTN; if so whether this additional use of DSC should be considered in deciding upon mandatory DSC for radios; and, further, whether or not other signalling schemes should be considered. In

proposal requirements were based upon incorporation of reasonable minimum safety and operating considerations with minimal mandatory equipment cost increase.

+ Automatic interconnection of phone calls is clearly a highly desirable capability from the user viewpoint. As such it would appear that incorporation of such capability in ship-shore systems will be market driven without the need for governmental regulatory intervention.

* A. Inquiry; Narrow-Band Direct-Printing (NBDP):

  o Paragraph 19:

    • Comment:
      - The Commission should not specify a maximum limit on data rates. Such a maximum limit would inhibit the advancement of technology, not stimulate it. Instead of limiting baud rate, a much better method of avoiding adjacent channel interference would be

rules. Note that CCIR recognizes both 100 and 200 baud operation.

- Comment:
  - Provisions of Part 80 should be reviewed to determine if they are adequate in allowing methods of data modulation to be used in the HF, fixed/mobile and maritime wide band.

* Policy Issues:

* A. Inquiry; Private Carriers:

  - Paragraph 21:

    - Comment:
      - It is essential that there be some form of competition between entities furnishing voice and data communications services. There may be few smaller companies who will desire to furnish their own communications if there is an affordable alternative. With the introduction of new technology, public coast stations should be given the opportunity to offer data services as well as connection with the PSTN. A mix of public coast stations with exclusive channels for voice and exclusive channels for data should be allowed to compete with private carriers offering identical services. Private coast stations should still be allowed to communicate with the vessels they have served on shared channels in the past. The mix of the types of services should be aimed at equalizing the loading of all available channels.

* A. Inquiry; Exclusivity:

  - Paragraph 22:

    - Comment:
      - The maritime communications community has not needed exclusivity except for public coast stations in the past. However, exclusivity may be the ingredient necessary to induce the development of new technology. With most of the newer technologies there are built in protocols that will allow trunking of multiple stations within a geographic area for voice or data communications. For some technology such as trunking exclusivity is a requirement.

* A. Inquiry; Permissible Communications:

  o Paragraph 23:

    • Comment:
      - There is no objection to land mobile use of public coast stations on a secondary basis. Equipment should be capable of automatically giving marine users preference in service. If new private carriers are authorized after new technology is introduced, they should be given the same opportunities. Equipment must include automatic queuing of callers wishing to make calls, and marine users must automatically go to the top of the list.

    • Comment:
      - Where there is unused channel loading on channels assigned to public coast stations they should, on a secondary basis only, be allowed to add other users, both mobile and fixed, to their operations. There are places in this country (Alaska to be specific) that do not have PSTN operations and can only be served by allowing public coast stations to communicate with them. By allowing these users to access the public coast system on a secondary basis, the Commission will be acting in the public interest and still be providing the maritime mobile service the primary operations needed for their operations. This would allow public coast stations to add revenue to justify the expense of their systems and still provide primary service to the maritime mobile service.

* A. Inquiry; Intra-service Sharing:

  o Paragraphs 24 and 25:

    • Comment:
      - There is support for Intra-service sharing of the MF (2-4 MHz) channels to alleviate the congestion to private coast stations in this band. With regard to the VHF marine bands, it is suggested that the Commercial and Non-Commercial designations be eliminated in favor of a new designation of "Ship Business" channels for all vessels. New technology should incorporate automatic power setting capabilities on all marine transmitters to keep the power levels as low as possible so that the channels will be able to be used by other vessels

equipment should automatically initiate routine calls at one watt and then adjust up or down as necessary. Much of todays congestion is the direct result of the vast majority of marine users using high power when it isn't needed.

- Comment:
  - There is no objection to allowing private coast stations to use public coast station public correspondence frequency pairs in the 2-4 MHz band.

- Comment:
  - License renewals should be referred to regional frequency coordinators, where they are available, so that conformance with established and modified regional plans can be enhanced.

* A. Inquiry; Automatic Interconnection with PSTN:

o Paragraph 26:

- Comment:
  - The Commission should work with public coast stations to provide for the implementation of automatic interconnect of PSTN and public coast stations. Monitoring for emergency, safety and calling traffic has been proven by previous rule making to be very adequate without a human operator for the VHF public coast stations. The Commission in the past has relaxed the requirement for a continuous watch by both public and private coast stations where the USCG and other agencies have coverage of the area of operation. The FCC should address the difficulties associated with defining Channel 16 service areas. There should be an operator available as a backup for any automatic interconnect system that is implemented so as to provide for unforseen conditions. This would allow for manual switched or interconnected service from within the DSC framework. Public coast stations

* A. Inquiry; Spectrum:

o Paragraph 28; Narrowband:

• Comment:
- Additional VHF-FM channels are urgently needed in the maritime mobile service for such purposes as non-commercial communications, data transmissions, VTS-2000 (the Coast Guard's initiative for improving vessel traffic services nationwide) and automated public correspondence. The Commission should continue to pursue 12.5 kHz channel spacing using NBFM. While it appears possible that such action can be accomplished unilaterally, without detriment to interoperability with foreign shipping, this particular issue should be given particular consideration. Regardless, the matter should be pursued with the International Telecommunication Union (ITU).

• Comment:
- Some organizations are working on the methodology of narrow-banding which may have to be phased in and controlled to reduce co-channel interference as much as possible. Most manufacturers indicate the cost for a narrow-band radio to be minimal. The most cost would be in the receiver, to increase sensitivity and selectivity. A number of marine VHF manufacturers also make land-mobile radios with NBFM technology.

• Comment:
- Support for unilateral (US or US/Canada) narrow banding from 25 to 12.5 kHz as many of the ITU Appendix 18 channels as can be done while maintaining essential compatibility with foreign vessels. This should be accompanied by international proposals to narrow band all of the marine VHF channels in the long term.

• Comment:
- Some of the resulting narrow band channels should be allocated to transmission of other bandwidths (e.g. 5kHz) for future advanced services.

• Comment:
- For this technology to work, the Commission should consider establishing appropriate minimum NBFM receiver standards, particularly, adjacent channel rejection.

- o Paragraph 29; Inter-service sharing:
  - Comment:
    - Maritime users should be permitted, where practicable, to share PLMR channels allocated internationally for maritime operations. Loss of these channels not only contributes to congestion in the maritime bands, but has also caused a safety problem. For example, the VTS uses the principle port operations channels for their operations. This has led to congestion on port operations channels for users requiring normal non-VTS port operations. Action should be taken to provide for sharing PLMR frequencies with maritime users in areas where congestion exists on maritime channels. Defined geographical areas should be designated for exclusive maritime use where congestion is severe and safety is impacted. Other areas could be designated for shared use. It is believed that relief of congestion has been long overdue and the commission should be urged to authorize shared use to bring this about. Coordination of sharing might be effected through regional coordination services; however, the commission must take decisive action to bring unwilling PLMR licenses to the negotiation table.

* IV. Conclusion:

  - o Para 43 in regard to other issues:
    - Comment:
      - Ship Station License: Mariners purchasing emergency position indicating radiobeacons (EPIRBs) are in technical violation of Commission regulations if they fail to update their ship station license accordingly. Since EPIRBs are strictly lifesaving devices, it has been suggested that all ship station licenses be amended to automatically cover every type of EPIRB authorized by the Commission.

**ANNEX B TO RTCM COMMENTS OF MAY 25, 1993**
**ON FCC NOI PR DOCKET NO. 92-257**

## Further Reasons for DSC Requirement

The Coast Guard's primary purpose for making this request is for reasons of safety, to ensure maritime distress and safety communications remain interoperable among all vessels, as discussed earlier. There are however additional reasons for granting this petition, all of which also involve maritime safety:

DSC could reduce or eliminate the congestion problem on the VHF distress and calling channel 16. The Commission in PR Docket 91-167 (Notice of Proposed Rulemaking permitting VHF Marine Channel 9 to be used as a second calling channel), stated "the most common complaint received by the Commission related to marine radio usage

DSC provides rapid receipt of distress alert. DSC provides a preformatted distress alert which includes vessel identification, location and other vital information, which can be transmitted within a second or less. Vessel location can be obtained automatically from an existing LORAN C, GPS or other receiver, or entered manually. With this capability, vessel operators not having time to send a complete MAYDAY message over radio (e.g. in the case of the F/V SOL E MAR) could send a complete DSC distress alert.

DSC significantly increases the probability that a call to the Coast Guard will be received. The FCC noted in their report on use of VHF Maritime Radio in Boston Harbor 1. that "It was quite common to observe 400 calls being made per hour on Channel 16 in Boston [redacted] during prime time or weekends" and stated calls were more

believe it to be essential that a ship-to-ship alerting capability for distress and other safety purposes continue to exist even after watchkeeping on voice radio channels ceases in 1999. The only existing telecommunications system capable of meeting this need for ship-to-ship communications on a worldwide basis is voice watchkeeping or DSC in the maritime mobile service.

DSC provides a means for automating VHF and HF public coast stations, and could help improve the economic viability of operating these stations. A healthy public coast station service is important in maintaining a healthy and effective maritime mobile telecommunications system. Such a system is essential for maritime safety.

DSC improves the ability of the Coast Guard to contact ships in an emergency. DSC will enable the Coast Guard, public coast stations or other shore units to contact ships concerning a marine warning or distress in their area, or for some other urgent matter, without requiring the ship operator to actively guard a radio channel.

We are concerned for the hundreds of thousands of vessels and mariners excluded from a modern and automated distress system. The GMDSS, and under the conditions of its implementation by the Commission in the United states, only addresses those compulsory vessels of 300 gross tons and over and certain passenger vessels. Various estimates of U.S. vessels in those categories range from 350 to 500 vessels. The initial reaction from the U.S. marine electronics industry with approximately 40 maritime radio manufacturers or distributors to such a limited market was not conducive to any effort to produce new radios with DSC capability.

The Commission has had an open agenda item for several years regarding a requirement for Automatic Transmitter Identification System (ATIS) for transmitters. The minimal DSC requirements proposed provides for self-identification. This then could serve the concern of the Commission for ATIS and the Coast Guard concern for false distress messages.

DSC technology is established in treaty and is recognized internationally. While other technology could conceivably be